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Epidemiological importance of concealed nongonococcal urethritis

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SUMMARY Of the 229 806 new male patients attending venereal disease clinics in England in 1976, 31·9% had recognisable non-specific genital infection (NSGI), which was easily the most common diagnostic category of the sexually transmitted diseases (STDs) and one which had increased more markedly than all the others in the previous 25 years. Many more cases of nongonococcal urethritis (NGU) are concealed under the diagnosis of gonorrhoea, as is clear from the high incidence of post-gonococcal infection following treatment with penicillin. From 44% to 56% of male patients with gonorrhoea can also have non-specific genital infection during the same year. A practical treatment schedule for gonorrhoea which is also effective against simultaneously acquired non-gonococcal urethritis would be of great value.

Introduction

Nongonococcal urethritis (NGU) is one of the greatest problems in the management of the sexually transmitted diseases (STD) and represents a source of much psychological trauma to those affected. It is by far the most common condition requiring treatment in British clinics.

Epidemiological data

RELATIVE IMPORTANCE OF THE STDS IN MEN

The relative importance of the recorded sexually transmitted diseases in men in the clinics in England is outlined in Table 1; the dominant role of non-specific genital infection (NSGI) is clear. In 1976 the number of cases of NSGI in men was virtually twice that of gonorrhoea, five times that of venereal warts, 11 times that of candidosis, 16–19 times that of herpes simplex or pediculosis pubis, 25 times that of syphilis, 38–44 times that of scabies and trichomoniasis, no less than 123 times that of molluscum contagiosum, and 727 times that of chancroid, lymphogranuloma venereum, and granuloma inguinale combined.

It should be noted that the figures for NSGI now include some patients with non-specific proctitis: the vast majority of cases are, nevertheless, of nongonococcal urethritis.

Table 1 *Relative importance of the sexually transmitted diseases in men (England 1976)*

Diseases	*No. of cases*	*Relative incidence %*
Non-specific genital infection	73 425	100
Post-pubertal gonorrhoea	37 179	50·6
Genital warts	14 389	19·6
Candidosis	6601	9·0
Herpes simplex	4458	6·1
Pediculosis pubis	3905	5·3
Syphilis (total)	2999	4·1
Scabies	1937	2·6
Trichomoniasis	1682	2·3
Molluscum contagiosum	598	0·8
Chancroid, lymphogranuloma venereum, and granuloma inguinale combined	101	0·1

PROPORTION OF CASES OF NSGI

Grouped figures for new cases of STD in men attending sexually transmitted disease clinics in England in 1976 are shown in Table 2.

In 1976, of the 229 806 male patients attending clinics in England with a new diagnosis, 25% were not treated at all or were given treatment for treponemal disease or gonorrhoea which was definitely not sexually transmitted (Table 2). Of the remainder, 15·9% had sexually transmitted diseases other than gonorrhoea or non-specific genital infection, 10·9% were treated for other conditions, which included anything from tinea cruris to those conditions treated epidemiologically in the absence of any evidence of disease, 16·2% had post-pubertal gonorrhoea, while no less than 31·9% had NSGI.

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Table 2 *Relative proportion of non-specific genital infection (England 1976)*

Condition	*No. of cases*	*% of total*	*% at highest risk*
Non-specific genital infection*	73 425	31·9	42·6
Post-pubertal gonorrhoea	37 179	16·2	21·6
Other STDs†	36 622	15·9	21·2
Other conditions (treated)	25 139	10·9	14·6
Total no. of cases at highest risk	172 365	75·0	100·0
Other conditions (not treated)‡	57 441	25·0	
Total	229 806	100·0	

*including those with arthritis
†including those with acquired syphilis
‡including all other patients receiving no treatment or referred elsewhere (48 with congenital syphilis, 710 treated for other treponemal disease, and nine with pre-pubertal gonorrhoea). The total number receiving treatment was thus 173 132.

If the 25% of patients with other conditions, who were seen mainly because of anxiety and who were given no treatment, are excluded, however, the 172 365 new patients remaining represent those at highest risk. Of these, 14·6% were treated for conditions other than STDs, 21·2% were treated for a sexually transmitted disease other than syphilis or gonorrhoea, while 21·6% had post-pubertal gonorrhoea, and no less than 42·6% were classified as having NSGI.

AGE DISTRIBUTION

While national data on the age groups of patients with primary and secondary syphilis and with gonorrhoea are collected, no data are assembled centrally for the remaining sexually transmitted diseases. At the STD clinics both at St Mary's and Windsor Hospitals nongonococcal urethritis affected a slightly older age group in men than did gonorrhoea (Figs. 1 and 2).

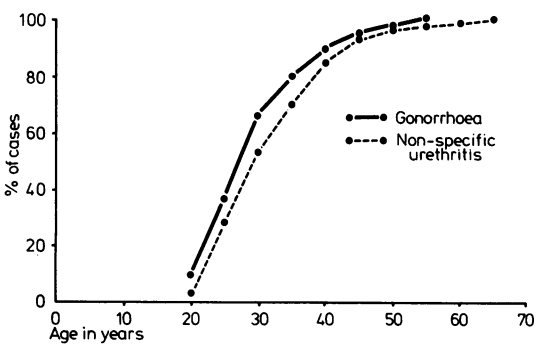

Fig. 1 *Age distribution of male cases of gonorrhoea and non-specific urethritis at St Mary's Hospital, London, in* 1952

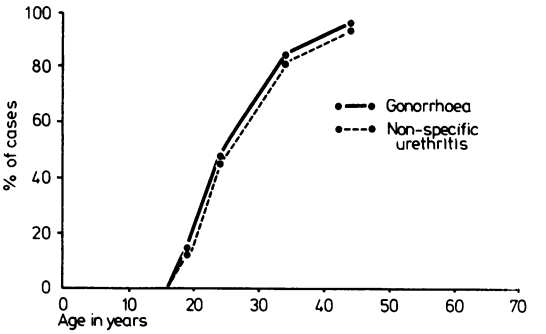

Fig. 2 *Age distribution of male cases of gonorrhoea and non-specific urethritis at Windsor Hospital in* 1977

INCIDENCE OF NSGI (1951–76)

In the period from 1951 to 1976, the relative increase in the incidence of NSU or NSGI in men in the clinics (Table 3) was markedly higher than that of gonorrhoea or of patients requiring treatment for conditions other than urethritis (Fig. 3).

The 1951 and 1976 figures are not quite comparable (Table 3); those of 1976 included all forms of non-specific genital infection, including non-specific proctitis, which tends therefore to increase the more recent figures, as proctitis was not included

Table 3 *Relative increase in incidence of NSGI*

Condition	1951 (*England and Wales*)	1976 (*England only*)	*Multiple of* 1978/1951
New patients	69 275	229 806	×3·3
Treated patients	39 319	172 365	×4·4
With gonorrhoea	14 975	37 179	×2·5
Treated for conditions other than urethritis	13 550	61 761	×4·6
With NSGI	10 794	73 425	×6·8

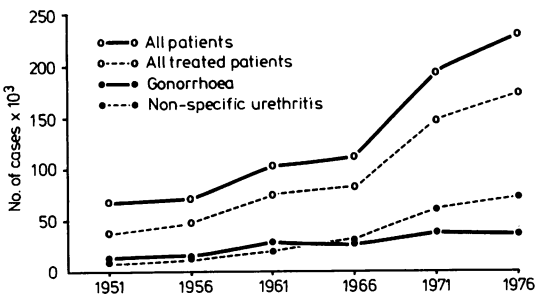

Fig. 3 *Number of male cases of gonorrhoea and non-specific urethritis in STD clinics in the United Kingdom from* 1971 *to* 1976

in 1951. This is offset by the fact that the figures quoted for 1951 refer to England and Wales, while those for 1976 (as a result of devolutionary pressures) only refer to England.

Thus with these provisions the number of male patients with gonorrhoea increased approximately 2·5 times, the number of patients treated for conditions other than urethritis increased 4·6 times, while the number of male patients with non-specific genital infections increased by at least 6·8 times.

INCIDENCE OF CONCEALED NSU

While some cases of gonorrhoea will be concealed under the diagnosis of 'other conditions requiring treatment' (for example, the relatively few men given epidemiological treatment after only one test to exclude gonorrhoea) and under the diagnosis of non-specific genital infection in clinics where cultures as well as Gram-stained smears are not routinely made on male patients, most cases of concealed gonorrhoea in men offer no great community problem as these patients have usually either been given epidemiological treatment or treated with tetracycline for nongonococcal urethritis—which treatment in practice is usually also effective against gonorrhoea.

Double infections are much more important among cases of gonorrhoea, as the treatment given for gonorrhoea (for example, penicillin or ampicillin) may well be ineffective against simultaneously acquired non-specific urethritis. This is evident from the fact that high rates of post-gonococcal, nongonococcal urethritis are noted in some clinics especially after treatment with the penicillins (Table 4).

Although some cases may be due to a persistence of inflammation with resolving gonorrhoea these are thought in the main to result from double infections. Those infections diagnosed in men are likely subsequently to be treated with tetracycline, but this treatment will not cover either non-specific infection in those who default or in those in whom the infection is subclinical or non-specific infections in female contacts of men with gonorrhoea.

Table 4 *Post-gonococcal, nongonococcal urethritis (St Mary's Hospital)*

	No. of patients		
		Retreated for NGU within two weeks	
Antibiotic (plus probenecid)	*Treated*	*No.*	*%*
Procaine penicillin	166	48	28·9
Ampicillin	353	95	28·5

ESTIMATED INCIDENCE OF DOUBLE INFECTIONS

It is difficult to estimate the exact incidence of double infections. Calculations can, nevertheless, be made of the proportion of nongonococcal infections in patients without gonorrhoea and this percentage can be applied to those who have gonorrhoea.

In 1976, of the 229 806 new patients seen in the clinics, 173 132 were given some treatment, and these represent the group at highest risk (Table 3). The size of the group at highest risk by these criteria is shown in Table 5.

The number of patients treated, with gonorrhoea and without gonorrhoea, are shown in Table 6. The proportion of treated male patients without gonorrhoea who had NSGI are shown in Table 7 (Fig. 4); this increased from 44·3% in 1951 to 54% in 1976.

Table 5 *Total number of new patients excluding those given no treatment*

Year	*Total no. of new patients*	*Untreated*	*Treated*
1951	69 275	29 956	39 319
1956	72 055	23 514	48 541
1961	103 077	27 567	75 510
1966	112 926	29 414	83 512
1971	192 953	45 967	146 986
1976	229 806	56 674	173 132
% rise (1951–76)	231·7	189·2	340·3

Table 6 *Total number of new, treated patients with and without gonorrhoea*

	No. of new patients		
Year	*Given some treatment*	*With gonorrhoea*	*Without gonorrhoea*
1951	39 319	14 975	25 344
1956	48 541	16 377	32 164
1961	75 510	29 519	45 991
1966	83 512	27 921	55 591
1971	146 986	39 055	107 931
1976	173 132	37 188	135 944

Table 7 *Proportion of treated patients without gonorrhoea with non-specific genital infection (1971 and 1976 England only)*

Year	*Total no. of treated patients without gonorrhoea*	*Non-specific genital infection*	
		No.	*%*
1951	25 344	10 794	44·3
1956	32 164	14 852	46·2
1961	45 991	21 472	46·7
1966	55 591	30 462	54·8
1971	107 931	60 708	56·2
1976	135 944	73 425	54·0

It can then be argued that the proportion of patients with gonorrhoea who have NSGI will be the same as the proportion of patients with a treated condition who have NSGI. The number of patients with gonorrhoea plus NSGI are calculated in Table 8 (Fig. 5).

Thus, in 1976, when there were 73 425 cases of symptomatic NSGI in men treated in the clinics an estimated additional 20 081 cases were concealed under the diagnosis of gonorrhoea, thus giving a total of over 93 000 cases quite apart from the considerable numbers treated in private practice and the unknown thousands with asymptomatic infections.

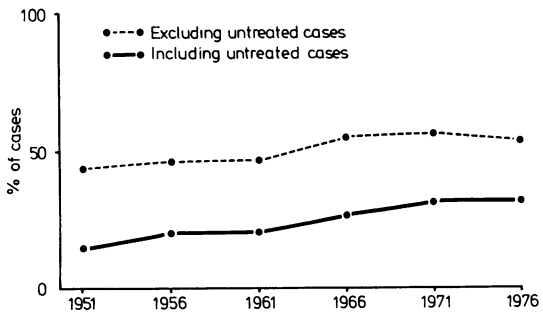

Fig. 4 *Percentage of patients without gonorrhoea with non-specific urethritis*

Table 8 *Estimated number of patients with double infections (England and Wales)*

Year	Total no. of men with gonorrhoea	Double infections	
		No.	%
1951	14 975	6634	44·3
1956	16 377	7566	46·2
1961	29 519	17 785	46·7
1966	27 921	15 300	54·8
1971*	39 055	21 949	56·2
1976*	37 188	20 081	54·0

*England only

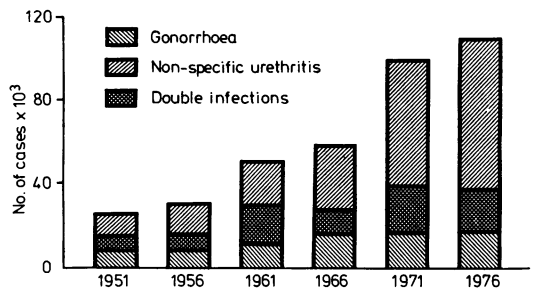

Fig. 5 *Estimated number of patients with gonorrhoea with non-specific urethritis*

EPIDEMIOLOGICAL IMPORTANCE OF DOUBLE INFECTIONS

If up to 50% or more of male patients with gonorrhoea carry the infectious agent of nongonococcal urethritis the epidemiological importance of double infections would be considerable.

The usual treatment given for gonorrhoea (such as, procaine penicillin, ampicillin, or spectinomycin) in the doses generally used is unlikely to suppress asymptomatic infections in patients of either sex. Even if treatment with tetracycline or erythromycin is given to men with post-gonococcal urethritis it is possible that this information will not be transmitted to the physician who may have already treated the female contact for gonorrhoea, particularly if this occurred at another unit or in private practice.

Conclusions

Non-specific genital infection is by far the most common diagnostic category for male patients attending venereal disease clinics in England. In 1976 the number of patients with this condition was virtually twice as many as those with gonorrhoea, five times those with venereal warts, and 25 times those with all forms of syphilis.

Of the 229 806 new patients seen in STD clinics in England in 1976 31·9% had recognisable NSGI. If the 25% of patients not receiving treatment, or who were treated for an asexually acquired gonococcal or treponemal infection, are excluded overt NSGI comprised no less than 42·6% of those cases at highest risk.

In the STD clinics during the 25 years from 1951 to 1976 the total number of new patients receiving treatment for gonorrhoea increased 2·5 times, those given treatment for conditions other than urethritis 4·6 times, while the number of patients with NSGI increased by no less than 6·8 times.

A significant amount of NSGI is known to be subclinical in both sexes. A number of cases too are concealed under the diagnosis of gonorrhoea, which can usually be expected to become apparent before simultaneously acquired nongonococcal urethritis. A probable 20%–30% of male patients treated for gonorrhoea with penicillins may subsequently require treatment for post-gonococcal, nongonococcal urethritis. These figures represent manifest cases; other patients with gonorrhoea (and their consorts) must also carry an asymptomatic infection.

An attempt has been made to estimate the incidence of NSGI among male patients treated for gonorrhoea. Those patients given no treatment were first excluded and those treated for any condition with or without urethritis were taken to be those at highest risk. From these data calculations were made of the incidence of urethritis among patients with sexually transmitted diseases but without gonorrhoea which was then applied to those with gonorrhoea.

Even though the data on which the calculations are based are annual figures, it appears nevertheless that 44%–56% of patients with gonorrhoea may have NSGI in the same year, mostly as a direct consequence of the exposure that led to the gonorrhoea.

The figures suggest that the epidemiological importance of concealed non-specific genital infection is numerically very significant. The possible ultimate control of this disease by means of diagnosis and treatment must therefore be considered doubtful. As a starting point, however, it would be desirable to formulate a treatment schedule which is effective against both gonorrhoea and NSGI for patients with clinical manifestations as well as their consorts. This treatment should be competitive in price with the regimens currently used for gonorrhoea in developing and developed countries (without any increase in anticipated side effects) and should be capable of being given in a single dose, or at most two doses. No product which will meet these specifications is currently available.

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